

Jennifer Tareila  
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Lesson Plan: Antibodies

**Title:** Antibody WebQuest

**Audience:** 11<sup>th</sup> and 12<sup>th</sup> grade Human Biology (some previous chemistry; all have had biology)

**Goals:** To introduce antibodies and antigens

**Student Objectives:**

At the end of the lesson, students will be able to:

1. Define what antibodies do and how they are constructed
2. Explain the role of antibodies in blood typing
3. Explain the role of antibodies in testing for diseases

**Purpose:** Antibodies are important components of the immune system. Students of human biology need to have an understanding of the sub-microscopic components (or third level defenses) of the immune system in addition to explaining that the body fights colds/ viruses by preventing their entry into the body (primary and secondary defense).

**Materials/ Resources:**

Computer with Internet access; handout

Web links:

1. <http://www.biologymad.com/master.html?http://www.biologymad.com/Immunology/Immunology.htm>
2. <http://www.biology.arizona.edu/immunology/tutorials/antibody/structure.html>
3. <http://www.med.sc.edu:85/mayer/ab-ag-rx.htm>

**Prior preparation:** verification of web addresses; copies for students of handout questions

**Time required:** One class period (48 minutes); perhaps a small amount more.

**Procedure:** Students are to answer the questions on the handout using the web pages provided, as well as create a hyperlinked document that contains two websites that provide helpful information on the topics presented (antibodies, antigens, testing procedures)

**Assessment:** Quiz

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Partner: \_\_\_\_\_

## Immunology Basics: Antibodies and Antigens WebQuest

### Web resources:

1. <http://www.biologymad.com/master.html?http://www.biologymad.com/Immunology/Immunology.htm>
2. <http://www.biology.arizona.edu/immunology/tutorials/antibody/structure.html>
3. <http://www.med.sc.edu:85/mayer/ab-ag-rx.htm>

(Links may also be found on the class webpage or on my hotlist in the “Teacher Hotlist” folder on the shared drive of the server.)

**Directions:** Use the web sites above to answer the following questions. Your answers to the last two questions *need to be emailed* to me. If I like them, the links will be added to the class webpage.

Questions:

1. What is the definition of an antibody?
2. What is the definition of an antigen?
3. What shape is an antibody? Draw it below.
4. What are antibodies composed of?
5. The answer to number four makes antibodies a type of: (Circle one)  
carbohydrate          lipid          protein          nucleic acid
6. What do the terms HV and FR regions mean?
7. Why are these regions important?

8. What holds the chains in the antibody together?
  
9. Give a few examples of common antigens that you would be familiar with.
  
10. What are the four responses that antibodies can have to an antigen?
  
  
11. What do antibodies have to do with blood type- explain carefully!
  
  
12. So, why is type O- blood considered to be the universal donor?
  
  
13. Why are antibodies referred to as “memory molecules”?
  
  
14. Why is the antibody/ antigen fit described as a lock-and-key model, the same as enzymes?
  
  
15. What is ELISA? How does ELISA work?
  
  
16. Find two webpages that have information about the immune response regarding antibodies and antigens. Email the address to me with both partner’s names!